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EX892ESC

The participant-observer - CULTURAL PATTERN AND NUTRITION
Difficulties in the exclusive
method
Compilation of of a Village of 100 Inhabitants
Presented in the Coastal Plains Area
of a Southeastern State

By

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"For financial aid in this study I am indebted to the Harvard Committee on Research in the Social Sciences." - Dr. Carle C. Zimmerman, Department of Sociology, Harvard University, for whom the study was made.

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INTERRELATIONS BETWEEN THE CULTURAL PATTERN AND NUTRITION

PART I - INTRODUCTION AND TECHNIQUE OF ANALYSIS

Introduction

Importance of Relating Cultural Patterns to Nutrition.

Nutritional authorities have for some time been aware of the immediacy of the problem of malnutrition in America. More recently, the likelihood that this problem of peacetime may become even more pressing in its relation to national defense, together with rapidly increasing discoveries of food and vitamin values, has led to action on a wide scale. Yet the common man has still to be aroused to his danger.

Moreover, it will be difficult for nutritional experts to effect actual changes in the eating habits of the millions, for this technical knowledge is not enough. The repeated insistence, for example, that whole-wheat bread is more healthful than refined white bread was met with vast indifference by the consumer public. Similarly, it is not a matter of increasing the food income, for the same sum can buy an inadequate diet in one case and an adequate diet based upon wise choice in another. Nor is it a problem, as welfare agencies can testify, of the distribution of surplus commodities, for certain available foods may not be eaten if there is no local taste for them. These are all component aspects of the larger problem of the relation of food and food habits to the cultural pattern.

The Nature of the Study.

Other studies have dealt with special factors. This study does not pretend to exhaust the data which would be revealed by more specialized investigation. Although the conclusions here presented are corroborated by the excellent statistical studies done elsewhere, our main purpose was to study the inter-related factors involved in the food habits of a village in a Southeastern State with a view to suggesting how the foods approved by nutritional experts may find their way into the mouths of the village residents. If other sociological studies have failed to investigate food habits and nutritional studies have omitted sociological analysis, it is our purpose to bridge the gap, necessarily in a less exhaustive manner.

The Place and Previous Investigation of It.

For our study we selected a village of about 300 inhabitants in the Coastal Plains Area of the State. For the purpose of this study the village shall be known as Grome. The fact that it is one of the oldest villages in the State, as well as its being now relatively isolated, favors a study which may take into account the course of

cultural change. It was selected by Dr. C. C. Zimmerman for a series of Studies like the present, each in regard to a particular factor - history,^{1/} literature and education^{2/} - but all concerned with an interpretation of the community as a whole. We have tried to discover what is "the curse of Grome" of which local residents speak, and have variously found its explanation. By working together over a rather long period we have much empirical data mutually available. The fact that each investigator has had not only a degree in sociology but also a degree in the field of the specialized study has been an aid.

The Technique of Analysis

The Participant-Observer Method.

The method developed, under the direction of Dr. Zimmerman, is a combination of the reconnaissance and the participant-observer methods with elements of Le Play's scheme of analysis.

We lived in Grome for 6 weeks in July and August 1940, at the only boarding house and participated in the community activities. Our landlady introduced us to everybody and took us with her to church services, ladies' aid meetings, and visits. Her own prominence in the community, as well as her lively interest in our work, made her a rich source of general information and community attitudes. In addition, we were constantly absorbing information in the course of talking with storekeepers, taking day-long trips on the grocery delivery trucks throughout the countryside, visiting relief cases with the county welfare worker, visiting county institutions, photographing, fishing, swimming, bowling, and constantly interviewing the residents.

Difficulties in the Exclusive Use of the Statistical Method.

It is advisable to disguise one's purpose as an investigator somewhat, especially in a study having to do with what people eat. Grome understands historical investigators but fears any coming nearer home. They are associated too much with critics, case workers, and (because of local distrust of strangers in these days) even foreign spies. Where there is a strong pride in a long heritage, it is impossible to go into homes armed with long questionnaires and a notebook, or to weigh food, or in any way to interfere with the normal course of a busy housewife's day. The very persons most malnourished are also those so busy with keeping alive at all that they most lack the time to keep records. Previous researchers found that children were unreliable for records because they reported the type of diet which they thought they ought to have. Relief workers may force families to give authentic information, but most people refuse to be formally weighed and measured.

The initial objection to investigation may perhaps be overcome by showing how advantageous nutritional advice can be, by selecting the

^{1/} An unpublished study by Charles Reynard.

^{2/} An unpublished study by Margaret T. Cussler.

most intelligent families and winning them over, and so on. We found it convenient to do this sometimes, but we also found it helpful to soft-pedal our role in favor of neighborly chats and visits and to win the confidence of the community as individuals by participation in activities. It seemed better to conduct interviews without a notebook and to stop outside to write down the information secured. Sometimes we put it on an historical basis: we wished to compare the diets of 100 years ago with those of the present to see how people had improved! We found that it was inadvisable to take literally requests for advice on food; one must recognize when the inquirer will be offended if his menu is not praised and when he is sincerely seeking to know. In short, the delicate subject of food habits has not yet attained the objectivity of medical investigation; it still requires tact.

Compilation of Available Data Previously Obtained.

All this informally obtained information came gradually. Our first procedure, following the reconnaissance method, was to compile and examine the results of previous investigation. The records of State and local health officials, relief agents, home demonstration agents, State and local education departments, past records from old store ledgers, Farm Security Administration records, census materials, the file containing clippings and pamphlets on the county in the Rural Economics Library at the State university were all important for getting quickly a comprehensive picture of the nutritional situation. Most helpful were the records of the home economics teacher in the local high school, who had been asked the year before to conduct surveys on the subject during the school year.

Previous Data Supplemented by New Research.

This empirical data we supplemented by our own records. We collected all the menus available. Those in the boarding house were the best first-hand source of diet, cooking, and tastes. The school lunchroom menus for the year were also accessible. Most important of all, we selected about 30 families for case studies. Although we recognized the importance of proper sampling in choosing families for case studies, we were influenced, as indicated above, by the necessity of using those psychologically accessible. With the aid of our landlady we made a list of three groups of families: Those likely to have a minimum diet, those of the middle social class with presumably an average diet, and those of the highest social class with probably a superior diet. We felt that the landlady's knowledge of these families' cooperativeness and their individualities, and the entree of a local resident's introduction would offset possible disadvantages. Further acquaintance with the town broadened our family studies. Local relief administrators suggested families for the minimum diet sample. The home economics teachers suggested girls in her classes who would cooperate in keeping records.

Other data were obtained by listing purchases from the grocery trucks to ascertain what was chiefly bought or traded by local

residents. From general stores and nearby drug stores we got lists of patent medicines in most general use.

Importance of the Informal Review.

The most valuable part of the technique was found to be the reliance upon informal interviews. It was important to find out in the course of conversation the reasons why the county health officer's figures on pellagra might not be wholly reliable, the general attitude toward home demonstration meetings, incidents which revealed the significance of individual prejudice and village faction--all the meaningfulness back of the data which might confirm or refute the cold figures. Although human motives and reactions will not appear in the official records, they are the very factors which will assist or thwart the scientist. Here local people appear to be of the utmost value in interpreting the tangled strand. Old doctors, long residents, welfare workers with long local experience, the group which nightly gathers to discuss town minutiae, and even the village gossipers properly discounted (for they show attitudes when they miss the facts) should not be neglected. Thus a balance between empirical data and dynamic forces may be achieved.

Advantages and Disadvantages of the Technique.

The disadvantages of this technique will be evident. Nutritional experts will note that the quantities of food have not been weighed, nor exact calory or vitamin computations made. There is no exact division of the sample families into income groups; indeed, they were instead divided according to general social status. There were no complete dietary records kept by weekly periods. Although the school and other records used cover the entire year, our first-hand case studies cover what may be expected to be the best season of the year from the standpoint of diet. It would be desirable to have been invited to meals in a variety of homes, but people had an understandable reluctance to inviting critics to dinner; besides, normal conditions would have been changed in the interests of hospitality.

On the other hand, it is also evident that the technique has many advantages. It is valuable to become part of the community rather than to be apart from it. It is necessary to assay past data and to gather new data. Rather intimate knowledge of the intricate food problems of a small locale is more fruitful than cursory figures on a wider section, provided one makes use of specialized statistical studies by way of a check. Most essential of all, the investigators approached the problem with recognition of the many interrelations involved instead of isolating a single factor from its dynamic context. Furthermore, several investigators with different points of view, working together, are more likely to get a true picture of the problem than a single researcher.

PART II - THE NUTRITIONAL SITUATION

General Material Conditions

The following summary of the standard of living of 131 families was compiled at Grome by the high school home economics teacher. It will give the material setting for the nutrition studies.

Survey of High-School Students.

State Department of Public Instruction
Division of Vocational Education
1939-40

Summary Sheet for Home Record

Total number of home records used in making summary: 131

Family

Average age (pupil)	15
Distance from school	7.3 miles
Boarding	2
Share bedroom	100
Father's occupation-	
Farming	108
Business	8
Industry	24
Profession	5
Father living	121
Mother living	116
Average size of family	6

House (con't.)

Finish of walls	
Ceiled	95
Plaster	29
Wallpaper	7
Painted	65
Unpainted	60
Number of rooms (av.)	6
Surrounding conditions	
Sanitary	49
Unsanitary	39
Planted	79
Not planted	15

House

Home owned	99
Home rented	32
Type	
Cottage	
Apartment	
Two-story	87
Frame	13
Brick or stone	
Condition of house	
Old	114
New	17
Well-kept	42
Repairs needed	84
Painted	74
Unpainted	57

Conveniences

Source of water	
Well	125
Spring	
Municipal	
Private system	6
Running water	
Kitchen	12
Bathroom	6
Toilet	5
Type of sewage	
No provision	25
Privy	89
Septic tank	4
Municipal	1

Conveniences (con't.)

Heating system	
Fireplaces	13
Stoves	129
Furnace	
Fuel, cooking	
Wood	121
Coal	
Oil	36
Gas	2
Electricity	
Lighting system	
Oil	100
Gas	7
Electricity	25
Fuel, Heating	
Wood	130
Coal	
Oil	3
Openings screened	89
Household conveniences	
Electric iron	60
Electric vacuum	
Electric refrigeration	9
Ice refrigeration	43
Washing machine	13
Pressure cooker	11
Canning outfit	11

Management

Mother does all the work -	1
Who helps	
Daughter	123
Sons	6
Others	19
Hired person	11
Mother works out	25
Type of work	
Farming	17
Business	6
Industry	2
Professions	
Family garden	113
Food preservation (home)	
None	12
Small amount	46
Ample for family	71
Extra for sale	2

Management (con't.)

Pupil home activities	
Assist housekeeping	115
Assist clothing	84
Assist foods	92
Miscellaneous	108
Family clothing made by	
Mother	61
Daughter	12
Relative	21
Hired help	9
Ready to wear	70

Family possessions

Own cow	57
Poultry	113
Pig	103
Sheep	2
Automobile	71
Radio	84
Victrola	45
Piano	23
Other	48
Telephone	2
Magazines	
American	5
Country Gentleman	5
Good Housekeeping	6
McCalls	3
Progressive Farmer	75
Saturday Evening Post	2
Colliers	1
Pathfinder	2
Others	102
Newspaper	108

Personal Interests

Individual interests	
Music	27
Sports	31
Dancing	16
Religious work	1
Others	87
Have a hobby	124
Hobbies	
Dancing	11
Stamp collecting	1
Sewing	6
Cooking	1
Others	105

Personal Interests (con't.)

Hobbies	
Dancing	11
Stamp collecting	1
Sewing	6
Cooking	1
Others	105
Leisure time	
Nothing	30
Develop hobby	14
Visiting	22
Movies	1
Read	43
Assist at home	5
Walk	7
Sing or play	9

Personal Interests (con't.)

Earn Money	121
How earn money	
Work for pay	120
Other	1
Have allowance	11
Spend money	
Foods	21
Clothing	93
Recreation	24
Savings	1
Budget	1

Analysis of student survey.

For convenience, we can pick out an average family. It consists of six subsisting by tobacco farming. They live in an old six-room frame house which they may own.^{3/} Inside, the walls are painted; there is probably a ceiling. The furnishings are extremely plain. Well water is used, but there is no pumping system. There is a privy for sewage, a wood stove for heat, and oil for lights. There is a home garden which provides a surplus for canning. In the household tasks the daughters help; in the season they earn extra money helping neighbors with the tobacco. The family does not have a cow but owns either a radio or an old car. Both a daily newspaper and a weekly agricultural journal are read.

From a health and nutritional standpoint certain comments may be made on the results of this school survey. A rather large number of families do no canning at all, and more can a very small amount. This is surprising in view of the community's being so largely rural. The prevalence of wood stoves must encourage frying foods rather than roasting. The lack of refrigeration, together with the lack of cows, means a shortage of milk and foods cooked with milk; it may also make for a monotonous menu. As to sewage, Grome is nearing the end of a local campaign to provide privies everywhere, so that we shall expect that hookworm will no longer be seriously important as a disease. Similarly, the high proportion of screened houses has undoubtedly aided in the eradication of malaria. The summary itself is a proof that 131 farm families are being made conscious of these factors and are receiving through the children up-to-date information on home economics.

^{3/} U. S. Census, 1930. Of the families in the county in which Grome is located, 54 percent owned their homes and 46 percent were tenants.

Pertinent statistics on the County Background.

Statistics available on the county in which Grome is located show that it ranked low in comparison with the other counties of the State in the following respects:

Rural electrification	Rank 40
Inhabitants per auto	52
State highway construction costs	47
Unemployment compensation	43
Church membership	43
Inhabitants per physician	62
Malnutrition	47
Infant death rate	54

The county ranked relatively high in the following: Crime (24), marriage (10), and divorce (.26).

The figures on livestock and crops for the county indicate a significant downward trend in the production of horses, cattle, hogs, corn, and sweetpotatoes; and an upward trend in mules, Irish potatoes, and tobacco:

			<u>Crop acreages</u>		
	<u>1920</u>	<u>1930</u>		<u>1920</u>	<u>1930</u>
Horses	2,278	1,115	Hay	6,515	6,510
Mules	2,859	3,485	Potatoes	1,823	3,296
Cattle	3,738	2,535	Sweetpotatoes	2,129	1,246
Hogs	25,887	11,412	Tobacco	8,826	14,764
Chickens	103,370	103,073	Corn	31,215	29,071

Nutrition

There has long existed a shortage of food materials in the county. The 1910 Census showed that this shortage amounted to \$1,945,396 worth of food supplies, including deficits in butter, fowls, eggs, corn, wheat, and hay. From 1860 to 1910 the county decreased 88.6 percent in production of wheat. The half-century decrease for milk cows was 53.1 percent, for other cattle 21.2 percent, and for sheep 60.7 percent. Hogs increased 10.8 percent, but population increased 11.9 percent. (And this was based on the 1910 census!) The solution reached by one investigator even then was to raise your own "hog and hominy." This would free the farmer from the tyranny of the market and high cost of living. The reason this has not been done, he says, is the pernicious one-crop system, which, itself, is a result of the pernicious tenant-farming system.

There were other early protests against the trends indicated by these figures. A resident of the county, writing in 1917, also urged that the county get rid of the tenancy system and establish a larger class of home-owning farmers. He asserted that the one-crop system (tobacco) was an evil and that diversified farming and livestock were necessities. In 1910 one writer was complaining against cotton as the one crop, but by 1917 it had evidently been largely replaced by tobacco as the great money crop.

A movement for cooperation on nutrition is now in progress among 10 State and Federal agencies in the State in which Grome is located. The State department of Public Instruction, the Agricultural Extension Service of the State college, the State board of health, the Farm Security Administration, the Work Projects Administration (Adult Education division and garden canning and lunchroom projects), the National Youth Administration, the State board of charities and public welfare, the Federal Surplus Commodities Corporation, and the State department of agriculture. They have agreed upon certain policies:

Curing families from ailments indicating faulty diets.
Arousing interest and appreciation of importance of good food.
Specifically:

- The year-round garden.
- A succession of fruits.
- A food-conservation budget.
- At least two family cows.
- A standard poultry flock.
- Meat animals.
- School lunchrooms.
- Hot lunches.
- Emphasis on the importance of whole grain.
- Importance of canning.

Data From Family Case Studies.

The emphasis upon the all-year kitchen garden as the main source of food supply seems logical, for it will make the family independent of transportation and, to some extent, of refrigeration. The following summary is compiled from the nutritional schedules which we filled in on residents of the township in which Grome is located:

- Number in family to be fed - 5.5
- Families having cows - 36 percent
- Families having kitchen gardens - 90 percent
- Home-grown vegetables in order of frequency of occurrence:
 - Collards, tomatoes, butter beans, turnips,
 - corn, cabbage, cucumbers, onions, okra, string
 - beans, green peas, Irish potatoes, beets,
 - squash, May peas, rutabagas, peppers, sweet-
 - potatoes, kale, snap beans, radishes, carrots,
 - lettuce, mustard, cauliflower.

Families having home-grown fruits - 33 percent

Fruits grown in order of frequency of occurrence:

Apples, peaches, plums, pears, cantaloup,
melons, nuts, black walnuts, blackberries,
strawberries.

Families canning - 68 percent

Vegetables and fruits canned in order of frequency:

Tomatoes, peaches, corn, corn and tomatoes,
cucumber pickle, apples, apple jelly, apple
sauce, cucumbers, butter beans, string beans,
beets, grapes, plums, huckleberries, blackberries,
strawberries, cabbage relish.

Poultry per family - 70.3 chickens

Families keeping pigs - 41 percent

Milk Consumption.

It is immediately evident that the number of case families keeping cows (36 percent) is far lower than the number cultivating kitchen gardens (90 percent). And in a survey conducted by the home economics teacher at Grome High School on milk consumption in the families of her girl students, the following facts emerged:

Out of 15 girls in the township reporting-

5 drink milk.

2 occasionally drink milk.

8 drink no milk.

7 reported milk drinking by members of family.

In this village of about 300, only 7 cows are owned. The milk of two of these is regularly sold locally, though the State law governing boarding houses would not permit our landlady to serve local milk because certain dairy regulations were not complied with in its production. Only powdered milk was served in the boarding house. An old resident of Grome who has always kept two cows has raised 15 children -- all of those whom we saw being notably healthy and physically above average for Grome. One former dairy owner, who abandoned dairying for the lumber business, rationalised his move to us by saying that there isn't enough pasture for cows. Perhaps not enough milk-drinking customers could be found in the countryside. Milk drinking, if it was ever a part of the mores, has largely disappeared from them now. Milk in some form- fresh, evaporated, or dried- is usually fed to the babies, but most of the children and adults ignore it. It is largely considered an infant food. Any attempt to convert these milk spurners into milk drinkers will be met by stiff cultural resistance. The grocery truck can scarcely carry around enough cold drinks to its customers, but no one ever asks for a pint of iced milk.

Perhaps there is considerable rationalising underlying the failure to make full use of home food production facilities. One suspects it, at least, when the comment about low yield from unsprayed fruit

traces is, "Oh, they're just old, I guess." Others say about canning, "It's too expensive to can these days."

Other sources of food.

Food, other than that produced, has to be obtained mainly from three sources: The traveling grocery trucks which make a day circuit out from each of two Grome grocery stores, and the town almost 20 miles away. The grocery trucks depended on developing personal contacts with the rural customers, so that gradually their distrust might be broken down. The poultry and eggs of the farmers were traded for staples, such as flour, salt, tea, and sugar; preserving jars and rubbers; and salt meat. Surprisingly, the most frequent hot-weather purchases were the soft drinks, snuff, and candy for which even squalid homes seemed to find the money.

There was little indication that the village stores were suffering from the competition of the town stores, although the trade involved often other considerations than money values. The local people liked, for instance, to patronize fellow church members: One grocery was run by the Christian Church Sunday-school superintendent, and the other by an elder in the Methodist Church. A third, "the commissary," required all employees of the only formal industry, a lumber mill, to trade there on pain of dismissal.

The town trade blossomed on Saturday nights when the week's supplies were often obtained by those who had found some means of transportation. Those on relief, especially the Negroes, of course, often had no means of transportation, so that they were unable to make best use of the funds given them. They were also unable to get into town for the surplus commodities, even though their diet might have been much improved by the wheat germ and citrus fruits available.

Analysis of the Diet for Nutritive Content

Average daily menus for classes at the three arbitrarily chosen social and economic levels^{4/} are shown in the appendix in table II. A sample of the schedule used to collect this data is given in table I.

^{4/} We separated the families chosen for our purposes roughly into three groups or levels - highest, middle, and lowest - which do not correspond at all to the distinctions between classes which those terms usually connote, as Grome residents might all be classed as the middle or lowest class. There is very little wealth or "culture," but closer scrutiny makes it apparent that social distance and difference in attitudes do exist: Villagers feel superior to country dwellers. What wealth does exist is here, as everywhere, used as a criterion of class. The richest woman in town is the recognized social leader, though social qualities like initiative and leadership are probably important for the (con't. on next page)

An evaluation of the nutritional adequacy of the average diet of each class is given in table VIII.

To summarize table VIII it can be seen that a few general characteristics pervade the diets of all three classes. They all show an overbalancing by carbohydrates and fats because of the excessive amounts of corn, biscuits, and fat meat used. Even though the income of the higher social-class families is better able to provide the essential nutrients in the proper balance, it is used to enlarge the volume of the diet by the addition of more carbohydrates at a single meal. Thus, for instance, corn will be used in several forms simultaneously - corn on the cob, stewed corn, and corn dumplings - or potatoes will be served at the same meal as boiled potatoes and potato salad. Fat meat is used liberally in almost every family to season all cooked vegetables; and the boiled pork, mostly fat but with some lean, is served as the meat. Among the higher class families which have a cow and use butter, this additional source of fats to the diet, and bacon and eggs, overburden the system with fats. This is especially deplorable in the long hot summer season when the body does not need so much fuel, for the use of fat meat does not change seasonally. There is a poor effort made to offset the huge intake of unnecessary calories by a great consumption of iced tea at two meals and sometimes at breakfast, as well as pop - usually one of the 243 varieties of colas.

There is, as all statistics show (ours as well as the census), very slight consumption of milk in this county. As explained elsewhere, this is due to the low percentage of families keeping cows, but more especially to the cultural aversion to milk drinking. If milk were only drunk more widely, it would help to fill in the deficiency in the diet of protein, calcium, and some of the vitamins. In a study made of the Coastal Plains area of another Southeastern State, it was found that the lack of iron in the soil renders pasturage insufficient for the support of livestock. This may also be true for the Coastal Plains Area of the State in which Grome is located, but we have not been able to verify it. Other cultural factors, such as the one-crop system, the aversion to milk drinking, or preference for the many social contacts engendered by tobacco farming may be more important.

ultimate classification. We took her and those of less wealth but high social qualities as representatives of the highest social class. The middle class comprised the majority of those farmers whose farming operations were more restricted and the townspeople whose lower income, standard of living, and general status made them seem average. The lowest social class comprised all the obviously disadvantaged families whose scale of living was barely above or even below minimum subsistence requirements, like those on relief. In short, the general impression of social class was likely to take into account other factors, such as education, which even more than income might affect the diet.

The use of vegetables is affected by both physical and cultural factors. Collards, for instance, is a vegetable which grows in this region all year and can be cheaply produced. It is, consequently, the staple vegetable of the lower classes. But many different vegetables could be grown. Carrots were seldom found in the kitchen gardens, although they could be eaten raw and would supplement the badly needed vitamin A, B, and C supply. What is grown is as largely culturally determined as what is eaten since both are parts of the same phenomenon - food habits. Except for potato salad, few salads are eaten. If cabbage were eaten raw more frequently, the vitamin C lost in cooking and the vitamin C lost when soda is used might be saved. Similarly, the cooking of tomatoes is disadvantageous. Tomato juice is not yet in the food mores generally. Although the middle and higher classes have a wider variety of vegetables, they follow the same cooking habits and show the same ignorance of nutritional balance. They make considerable effort in party menus to follow the urban standards, particularly of service, which the women's magazines have introduced.

Fruits, as additional sources of vitamins and minerals, could be employed in much larger quantities and variety, but tastes and the lack of proper horticultural knowledge are here influential factors. The high mobility of tenants also affects any permanent investment of this nature.

What meat is eaten is mostly pork. The poorer classes that do not have refrigeration buy the cheaper cuts - sides, back, and shoulder - which have been salted to preserve them. There is very little lean meat in these cuts, so that the protein content of their diet contributed by the meat is far below the usual standard. The better-off classes get more protein from eggs, milk, and an occasional chicken. The use of more milk, lean meat, cheese, nuts, soybeans, and other possible sources would do much to remove the deficiency.

The only vitamin which is supplied by all three diets in anywhere near adequate quantity is vitamin A, and this mainly through collards, all-year Irish potatoes, and sweetpotatoes in the fall and winter. The better-off classes that use butter have this additional source of Vitamin A. The investigator who made a study in another Southeastern State found that the diets of the farm families studied tended to show a vitamin A deficiency in spring and summer until the next sweetpotato crop matured. This might be the case with the Grome families, whose year-round diet we have not been able to study.

The use of grain products shows the same combination of physical and cultural influences, with the latter predominating. Corn is more easily grown than any other grain, and the yield per unit of land is greater. In addition, a long regional tradition dictates its use. It is used in a variety of forms, one very local form not found back on the Piedmont plateau being that of "corn dumplings" - corn bread boiled in the pot with vegetables and fat meat. The use of whole-wheat flour would go far toward filling the serious vitamin B and G and nicotinic-

acid deficiency, but the 5-pound sacks sold to the country people from the grocery truck were always white flour. Other grains - rye, oats, barley, brown rice, peanuts, soybeans, or even the corn germ lost in the bolting of corn meal - would all help to fill in vitamin deficiency.

The diet also shows considerable weakness in vitamin C (probably even more lacking in winter), calcium, protein, and the pellagra-preventive factor. In regard to this last, it was strange to find buxom, healthy women subsisting on the identical diet as pellagra sufferers. Possibly a hereditary factor is involved.

We found that the racial problem, a cultural factor, forms part of the nutritional picture, too. Negroes tended to live on more fatty foods and meats than whites, who ate more vegetables, fruits, miscellaneous foods, milk, and cheese. One investigator postulates a possible difference in the energy requirements of the two races. We found that other factors affect the differences. The whole social and economic level of the Negroes is lower than that of the whites-. Their diet is less varied; they have fewer and smaller gardens, less canning, less livestock, just as their schools are inferior, their houses in worse condition, and their income (usually as tenants), less. Inferior food and food habits seem an inescapable part of the whole social complex wherein this lowest social class finds itself at the tail end of available resources in a disadvantaged county in a disadvantaged State. The Negro may have to wait until a better standard of living finally reaches him. In the meantime, his chief hope lies in developing his own resources more fully. Negro cooks in a few white households in the locality may favor the diffusion of better food habits.

The Folkways of Cooking and Food Habits.

It is important to discover the attitudes back of the choices of certain foods and certain methods of cooking. These are often only revealed in the chance comments here directly quoted. More research of this nature may give clues as to how people are to be approached if changes are to be made.

Collards and cabbage are cooked about 2 hours with fat meat - "I like vegetables seasoned real good." The "pot likker" is sometimes fed to the pigs. Stewed corn is cooked in bacon grease. This adds to the high proportion of fats in the diet. "Crabs and sweets will sure do you bad if you eat them both at the same meal." This is one example of a tendency to give irrational conceptions about food. Older people dislike lean beef. Soda is used to "tender up" vegetables sometimes. "Biscuits? - Daddy eats 'em every meal - 20 a day if he could." "It's cheaper to buy canned milk than to grow your own." One woman does not drink milk "because of my bowels." "The baby was raised on Carnation Milk." "Every meal, you know, I feel like dumplings." "My old man'd eat an apple pie every mornin' for breakfast." "No vegetable garden this year. People with mules aren't interested in plowing for a small garden. The rows are too short, they say. I can hardly get one to do it."

Health

Sickness is related to the food supply because of the direct food deficiency diseases, and also more indirectly as a general measure of improper diet. Such debilitating diseases as hookworm and malaria particularly are connected with good food in the convalescent stages.

Pellagra

Although pellagra is now the chief reportable nutritional disease, it has only comparatively recently been reportable in this State, and was not recognized by the medical profession in the State before 1907. The following indicates the number of cases reported to the State department of health in the years 1929-1936:

	<u>1929</u>	<u>1930</u>	<u>1931</u>	<u>1932</u>	<u>1933</u>	<u>1934</u>	<u>1935</u>	<u>1936</u>
Cases	604	4,107	2,820	1,627	833	543	752	831

In 1930 the number of deaths from pellagra in the State was 1,002, as compared with 713, 618, and 276, respectively, in three other Southern States.

It would seem that the real number of pellagra cases is far in excess of the reported number if it is true, as the State board of health says in its pamphlet on pellagra, that there are 20 cases for every death reported, the actual number of pellagra cases in the State in 1930 was 20,040, whereas the reported number was only 4,107. In 1936, pellagra ranked 10th among all reported diseases in the State. According to the State board of health, the 10 most prevalent diseases in 1936 were:

<u>Disease</u>	<u>Cases</u>
Syphilis	- 6,086
German measles	- 3,326
Chicken pox	- 3,179
Tuberculosis	- 3,003
Influenza	- 2,830
Diphtheria	- 2,347
Gonorrhea	- 2,137
Whooping cough	- 1,566
Measles	- 1,395
Pellagra	- 831

In 1930, the county home agent and a doctor found 120 cases of pellagra in the county.^{E/} Of these they studied 88 cases and obtained the following data:

Number not taking milk - 84	Number not eating fish - 66
Number not eating eggs - 54	Number not eating beef - 71

^{E/} Extract from the annual narrative report of the County Agent, 1930.

Number not eating chicken - 78	Number not eating much fruit - 86
Number not eating greens - 32	Number not eating whole-grain
Number not eating many	cereal - 85
vegetables - 67	

The county health officer in 1940 declared that he did not believe it was a nutritional disease for two reasons: It is not found above the Mason and Dixon Line, and it is found in the best of families. (We ourselves believe that there are other explanations for his arguments.) He thought there had been a general disappearance of pellagra, as well as hookworm, malaria, and rickets. We believe that because of some prejudice that exists against him in the community, as well as perhaps his desire to represent the health office in a good light, his conclusions may not be entirely accurate. He was inclined to doubt pellagra diagnosis by other doctors. His figures on pellagra follow:

<u>Year</u>	<u>Cases</u>
1934 -	1
1935 -	11
1936 -	18
1937 -	3
1938 -	1
1939 -	6
1940 -	None to July 1

There is a decided disparity between these figures and the comments of case workers and our own observations. At the county home we saw a Negro then recovering from pellagra. On the rounds with the relief worker we saw two whole families connected by marriage. The grandmother of one family had been taken to a clinic several times for pellagra treatment and was still in an acute stage with skin lesions, polyneuritis, eyes out of which she could scarcely see, and diarrhea. Then too, the difficulty of diagnosis in the early stages may mean that minor cases escape notice. There is some indication that the people of the better classes were ashamed of reporting it; but we knew of two, one of them of the most well-to-do family in town, who had been visiting a clinic at intervals and taking nicotinic acid "shots."

Malnutrition and Rickets.

Malnutrition among school children was reported at 10 percent. Here again we were inclined to doubt the official figures because we heard that the school examinations were cursory. Two cases of rickets were reported in 1936, two in 1937, and 1 in 1939.

Hookworm.

Hookworm, the county health officer said, has about disappeared because of the building of privies and the wearing of shoes: There were no cases in 1936 and 1937 and only 1 case in 1938.

A 1940 survey of malaria, involving laboratory examination of several thousand slides from the schools of the county, disclosed, according to the State board of health findings, that the Grome High School had the lowest percentage of cases among its students - 0.44 percent or 2 cases out of 442 students. Although there were only 10 cases among the 1,557 white students examined, there were 30 cases among 801 Negro students. Older residents in the community remember malaria as being much more prevalent. The health officer says there is some tendency to call everything malaria and to doctor for it.

Medical Service.

In medical service, the county ranked 47 among other counties in the State. This may account for part of the contention by the rural people that the doctors will not come to them when they need care and the contention by the doctors that they are frequently unpaid.

Patent Medicines.

In lieu of physicians, people frequently consult the druggists. The patent medicines most frequently bought in the drug stores of a nearby town are:

For malaria

Quinine (in bulk)
Grove's chill tonic
666
Vinotone

For indigestion

Black Draught
Feenamint
Simmons' Liver Regulator
Bi-Sodol
C. R. C.

For colds

Vicks
Vatrol
4-Day Pills
Masterole

For blood tonic

S. S. S.
Ionized Yeast
Sasparilla Compound
Peruna

For pellagra

Ionized Yeast
Nicotinic acid (in tablet form on prescription @ \$2 a 100)

Other patent medicines on sale in the Grome general store:

Dr. W. B. Caldwell's Syrup of Pepsin
Laxated King of Herb Tonic
Grover Syrup for Roundworms
Dr. Dewitt's Eclectic Remedy
Dill's White Liniment
Dr. Mile's Nervine
B. C. Headache Powders
Johnson's Perfection Cough Syrup

From this list it would seem that much of the rural population may be technically free from such diseases as malaria and hookworm but may be suffering from a feeling of chronic ill-health. The frequent complaints about indigestion and feeling tired and run-down may be symptoms of the malnutrition already indicated from the rest of the study.

Another study emphasizes the indolence of Grome residents and their liking for spending most of their time talking on the benches near the store. This passivity, acknowledged by residents themselves, may have a physiological cause. The general impression the observer gets when he enters the town - of life proceeding in slow motion - is borne out on closer acquaintance with the townspeople. One cannot say they are in bad health, nor even "poorly," just rather quiet.

Agencies for Information About Food

State and County Agencies.

Undoubtedly the most valuable agencies for bettering the food habits of Grome are the established State and governmental departments. The Agricultural Extension Service maintains a hierarchy of specialists from the home demonstration and the county farm agents to the State director of extension. Through organized groups of women in home demonstration clubs, boys and girls in 4-H Clubs, and service clubs, information is dramatically spread to the people. The State board of health has a nutritionist on the staff, and local school nurses urge the development of school lunchrooms for hot lunches. The Farm Security Administration, through its county home management supervisors, recognizes the relation between economic independence and good physical condition and emphasizes gardens, canning, poultry, and fruit trees. The education department and the WPA together foster nursery schools and adult classes where food problems are discussed. The WPA also maintains a school lunchroom for which it grows and cans its own vegetables during the summer. The NYA employs girls of 18 to 24 years in homemaking and school lunchroom projects. The State board of charities, through the county welfare department, works with relief families on food budgets and balanced diets.

A skeptic who might wonder at the scope of these paper aims would find a surprising proportion of them fulfilled in Grome itself. Of course, an occasional project goes wrong, or an unwise purchase is made; and these lapses are publicized in gossip, but a vast number of services are successfully performed by these agencies. The secret of their success is to be found in the personnel. Numbers of sincere, hard-worked, intelligent, and tactful workers are making the ultimate contact between centralized planning and the farmer-consumer. We were consistently surprised by the caliber of these workers and more than ever impressed by the feeling that if they were inept or lazy, any State or Federal program would fail.

The most important outside agencies in Grome were agricultural clubs conducted by the home demonstration agent (a boys' club, a grammar

grade group for girls, and a joint club), and the WPA School Lunchroom Project serving 150 a day in Grome High School at 10 cents a lunch. Grome noticeably lacks a 4-H Club and home demonstration clubs because of a lack of local interest, the county agent said.

School Departments.

Deserving of particular mention are the departments of agriculture and home economics in Grome High School, which act under the supervision of the State department of public instruction, vocational education division. Grome teachers supervise projects even during the summer and visit the home of each pupil. In equipment, popularity, and service, they have become the most important departments of the school.

To 127 girls in the home-economics classes for 1939-1940, the teacher gave class instruction in the provision of food for the family. (This unit was second only to housing in the amount of time spent on it.) Not only did the teacher plan projects in accordance with local and individual requirements and visit each home, but all the girls were given a chance to live for a period in the model apartment in the school.

The home-economics teacher also reached the community by giving talks to the social, garden, and book clubs, and by having her classes put on suppers for special community occasions.

Adult Education.

An adult home-economics program failed in 1937 and 1938 for lack of interest "because of the time of year that the class was held." In 1939-1940, the home-economics teacher contacted the key people and got their support and wrote letters to prospects 2 days before the date set. Studies on the topic, "Foods for Special Occasions," proved sufficiently valuable to increase the membership from 6 to 20. The year's program covered: (1) meat substitutes and inexpensive meat dishes, (2) salads, (3) the motion picture, "Citrus on Parade," (4) refreshments for parties and get-togethers, (5) candymaking, (6) meal planning, and (7) a dinner for the husbands of the members. Much of the material sent out for such classes and programs is distributed by advertisers.

Similarly, the agriculture department of Grome High School reaches both students and adults. Students working on projects under its supervision have won county and State prizes. Parents ask advice from the teacher who also visits each home. The department joins in the movement to encourage kitchen gardens and dairy farming.

While nothing can excel such personal instruction and contact, nutritional information reaches the farm home via the weekly women's page of the local newspaper, and sometimes in an agricultural journal. Women's magazines and radio programs are important sources of information for the better homes, although few subscribe to general periodicals, and radio reception is poor in Grome.

Educational Outlook.

The educational outlook is bright. Machinery for the dissemination of information or for presenting food propaganda has already been set up and is working. The adults may be too set in their ways to change. A local doctor said that only 4 or 5 years ago the men folks couldn't be persuaded to eat lettuce or tomatoes. Our landlady's husband ate corn dumplings and fat meat at every meal, even when a much greater variety was offered. Still, there is every reason to expect that the young people reached by the school, whose food tastes are being reconditioned, are affecting their homes and will themselves be better trained for the future. They seem to be the most accessible to changes in food habits; therefore, any food campaign must emphasize the role of the schools.

PART III - GENERAL CONCLUSIONS AND PROGNOSIS

The Background of Agricultural Policy in Relation to Nutrition

Since this is predominantly a rural community, its food problem is intimately connected with present and future agricultural policy. We have seen how wise that policy is in regard to the food problem as such, but the indirect policy may be less favorable in other respects. One may question whether any system of commercial monopolies, in putting money into the pockets of the fruit growers, for example, does not take orange juice out of the mouths of Grome children. To be sure, money in the pockets of Grome tobacco farmers may take tobacco out of the pipes of the fruit growers, or it may enable both of them to buy more of each other's product. One may also question whether exaggerated parity prices for food products act to the benefit of all the disadvantaged classes of the Nation, or simply to one. One may wonder whether surplus food supplies are actually surplus, or, in the face of the increasing evidence that malnutrition on a large scale exists in America, are actually not surpluses at all but merely a minimum which is as yet undistributed. If the automobile industry may teach us a lesson, we may find that a "Ford" agricultural policy works better for both the producing farmer and the consumer than a "LaSalle" policy.

The present need of aid for Britain will necessitate a vigorous Government backing for increasing production of food. In Grome this will mean an increasing trend away from the one-crop tobacco system (which has been greatly injured by the loss of foreign markets) toward diversified farming. More than ever there is now a need for these farmers who are accustomed to import so much^{6/} to attain the ancient self-sufficiency of gardens, livestock, fruit trees and a canned surplus. Consequently, it must not be forgotten that a whole tenacious social complex will have to be disturbed by such a change, ranging from the present share-cropping system to the psychological preference for a money crop.

Distribution

Even when most farms approach nutritional self-sufficiency, there will still be the problem of making surpluses accessible to those in Grome who are still unable to grow their own food. It may be true, as one writer suggests, that the Coastal Plains soil does not contain enough iron to support dairy farming. If cheap imported milk solids are the solution, they must be accessible to those who have no means of transportation. In short, it is obvious that the paradox of scarcity in the midst of plenty is a phenomenon of inadequate distribution.

^{6/} The State in which Grome is located imports annually 8,000,000 pounds of butter, 13,000,000 pounds of cheese, and 30,000,000 pounds of evaporated and condensed milk. - Annual Report of Agricultural Extension Work in the State, 1938.

Consumption of the Proper Foods

But still the food may not necessarily be consumed by those who need it. Welfare authorities in Grome complained that the malnourished would not take the whole wheat germ because they did not like it. Present food habits are the result of time-honored folkways. Urban residents more quickly adapt new ideas. A thousand devices--subway cards, magazines, newspapers, billboards, store windows, radio announcements, and moving pictures drive home the latest conception in foods. But the rural population is scattered and relatively isolated. And as Sorokin and Zimmerman point out,^{7/} it is conservative. Food habits are so closely bound up with childhood impressions that they have become a part of each person's subconscious modes of action, even when no rational reason supports the taste - De gustibus non disputandum est. One of the pellagra patients in Grome in embarrassment tried to cover her arms with a towel when the investigator arrived. "I knew I did wrong," she said, "but I just couldn't eat right the way they told me."

Adult Education in Proper Foods Valuable, But Subordinate to That of the Young People

In spite of the long traditional background of present food habits, adult education will undoubtedly have some effect. The farmer of today is not the peasant of the Middle Ages evolving by 500-year periods; his cooperation in the swift changes of the social planning of the last few years have demonstrated that. However, those who really hope to change food tastes quickly must put their hope in the young people. They are more adaptable. They are more cooperative. More of them are directly affected, as indicated by the 127 in Grome home-economics classes in 1939-40 as opposed to the 20 in the adult home-economics classes. Therefore, it would seem that more and more emphasis ought to be laid on reaching the homes through the children.

Community Demonstrations of the Results of Various Diets

Actual demonstrations in each community of the superiority of one diet over another would be a good move. The investigators observed its success in an experiment on the children of a village near the State university. In the model schools at the State university, 50 of the most undernourished children were selected, after physical examination, for the demonstration. They were fed at the school with the protective diet. In 1 week there was such obvious improvement in some children that the parents were anxious that the demonstration be continued. Follow-up work at the conclusion of the demonstration included visits to the homes with supplies of wheat germ and evaporated milk, together with records on weight increases and general improvement. Such a demonstration seems practicable for every community if funds are available.

^{7/} Principles of Rural-Urban Sociology, Sorokin and Zimmerman, New York, 1929. Ch. XVIII.

Necessity of Appreciating Community Interrelations

The necessity of appreciating community interrelations cannot be too strongly emphasized. Other studies have described how community squabbling delayed or demolished one constructive project after another in Grome--a town sewage system, the proposed memorial library, a school playground, the revival of a church. Professional people in Grome have to tread carefully: A teacher has not been re-elected because he neglected to ask the leading townsman to address his class; a minister has found it good policy to write an important matron's paper for the social reading club. Small communities seem to be inevitably divided by factions and as inevitably united into cooperative groups. If the sociologist joins one village church, he will alienate members of the other church; if he joins neither, he will alienate both groups.

Just so in his projects. He must become aware of the set-up in each community so that his campaign will not appear to be the pet project of any clique, or, if this is impossible, he must ally himself with the strongest group. We have indicated how the home-economics teacher found that her adult education plan failed until she enlisted the support of the important persons in the town. No matter how well-meaning the effort, or even how essential to the very health of the community, plans to improve the food habits must not be blindly imposed from above but must come partly from within the community and be based upon sound apprehension of various community factors. It would, therefore, be advisable (1) That a preliminary sociological survey precede actual work in changing food habits in a community, and (2) that centralized leadership be coordinated with local leadership in nutrition education.

Importance of Proper Leadership

But who are to be the leaders in a movement to improve the nutritional health of the community? The schools of the county of which Grome is a part rose from rank 72 to rank 1 in respect to the qualifications of its teachers. With responsible leadership, Grome High School steers safely through the dangers of community quarrels. Community improvement certainly seems possible under the proper leaders. They should be tactful, competent, and hard-working. Under different agriculture and home-economics teachers who would be less willing to spend hours of outside work, the vocational program would not have succeeded. Grome will be fortunate if it can attract the type of leader who tries to serve the community. Within this particular town, a food project should enlist the two women leaders in the town. Through them the whole town could be reached, just as through two of the outstanding men an agricultural project could be put over.

Leadership as Counsel to Local Committees

An undemocratic system of leadership would not be the most successful, but rather some such system as the land use planning

movement. If local committees are formed within the communities to decide upon the problems, outside leadership can remain in the role of a counselor who will be available to assist in a felt problem rather than to direct its solution.

Full Exploitation of Local Nutritional Resources

In the interests of better nutrition, such a counselor committee would recommend the exploitation of local food resources. Optimal diets must be stated in the terms of local products - emphasis on the tomato for vitamin C rather than the citrus fruits, on collards and sweet-potatoes where other sources of vitamin A are not available. Grome's neglect of its rich supply of fish, particularly crabs and shrimps, is criminal. The present diet is very low in protein, but here is an excellent source of protein, as well as calcium, iodine, vitamins B and G, phosphorus, and iron, free for an hour's fishing. But many of the townspeople refuse to eat fish, particularly shrimps, which they regard as merely bait. Food instruction among adults and in schools cannot be presented, then, in the form of Ladies' Home Journal menus. It must show the housewife how she, far from urban markets, can best use the supplies she has on hand.

Development of Possible Local Resources

Moreover, the potentialities of the locality should be taken into account. Not far from Grome is the peanut belt of the South. Soya, perhaps, could be successfully grown. Certainly a variety of truck-garden crops is possible in such a climate. A wise program for making use of these resources would vary the present monotonous succession of fat meat and corn bread among the lowest classes.

Changes in Cooking Habits

Much attention should be paid not only to what is eaten but to how it is cooked. Since thiamin, ascorbic acid, riboflavin, and nicotinic acid dissolve very readily in water, foods such as cabbage and collards, which are left to cook with fat meat for 1 or 2 hours, lose much of their nutritive value.^{8/} The continual use of much fat in frying and cooking not only supplies too many fats for a balanced diet but makes the foods less digestible. Home demonstration agents and teachers can probably accomplish much since changes in cooking methods do not directly involve a change in tastes.

Devices for Re-Education

Re-education may be implemented by a national drive for better diets. All available channels of information, such as the radio, newspapers, farm journals, women's magazines, educational moving pictures, charts, posters, traveling exhibitions, and demonstrations may be

^{8/} "Pot likker" should regain its traditional popularity;
the Negroes like it, but the white people prefer iced tea.

mobilized as they were in the last war for the opposite purpose. But past experience has demonstrated the vast power of such a drive. If advertisers are enlisted with their dollars and publicity experience, some nice problems involving control of advertising which may seek to exploit the "hidden hunger" movement will appear.

In conjunction with the spread of information, a continuation of the present attempt by Federal authorities to insure an adequate diet without changing many of the present foods would be excellent. As Dr. Wilder suggests, if white bread can be fortified with vitamin B, sugar can be reinforced with milk solids; and if vitamin C is somehow provided, these three essential foodstuffs would provide an adequate diet even if a nutritional campaign failed.

Summary

This study has indicated that the food problem is but one of a complex of problems involving the background of agricultural policy, the educational system, the racial problem in the South, health and deficiency diseases, the distribution of surplus commodities, the economic system, and community interrelations. As far as the food problem can be isolated from this complex, there is considerable evidence that an insufficient diet exists. There is less evidence that there is much acute malnutrition now, but the danger is potential unless present food habits are changed.

Whatever means of changing the diet are selected - local demonstrations, school instruction, a Nation-wide campaign, or enrichment of the main foodstuffs--the problem in the last analysis involves the relations of man to man as a group learns to cooperate with its counselor. Everything that may be done is contingent on human nature. The cultural cake will not invariably turn out according to recipe. Dollars for food may go for a permanent wave, a movie, some bowling, snuff, or ice-cold pop. These are irrational, but they give some savor to life's bread and meat.

The result of such favorable interaction will not be a matter of information or of reason or even of better techniques. These are worthless unless a common sentiment for better food habits is developed. When Mrs. Jones of Grome regards a suggestion for changes in her menu as a slur or an eccentricity, this means that the collective consciousness, in Durkheim's words, has not yet been led to approve the essential diet.

Very possibly to develop this sentiment we shall have to take account of the heart and the spirit, as well as the head. Some feeling of mutual concern and self-sacrifice, some return to religion or a high humanitarianism may be the only therapy for so deep-seated a malady as racial inequality. There must be an emotional component in community reform.

We shall expect future planning to proceed by two steps forward and one back. There may be factions, as there often have been in Grome, so that admirable projects will come to nothing over a petty quarrel. There may be suspicion and distrust and vast disinclination to change. Grome, like an ancient turtle, may lift a sleepy eyelid at new ideas but then pursue its immemorial way. Yet it is the happy mission of those who build brave new worlds to develop a different sentiment.

It may even take a war for a nation to realize that civilians, too, travel on their stomachs.

APPENDIX

Table I - Sample of Schedule Used in This Study

No. in family to be fed: 3 (husband, wife, and daughter 15 yrs. old.)

Cow: None Amount of milk: 0 Butter: 0 Cheese: 0

Kitchen garden: Yes

Kinds and amounts of vegetables grown in garden: Tomatoes, corn, cucumbers, collards, string beans, green peas, cabbage, butter beans.

Amounts sold: None

Year-round garden: No

Fruits grown: Peaches

Amounts sold: None

Vegetables or fruits stored: None

Canning: 250 qts. so far this year: Tomatoes, corn, corn and tomatoes, cucumbers, cucumber pickle, preserved peaches, butter beans, string beans.

Chickens: 120

No. eaten and sold: None sold; chicken eaten several times a week, because it is the cheapest meat.

Eggs: Yes; eaten frequently. None sold.

Hogs: No

Cattle: No

Typical daily menus:

Sunday dinner: Fried chicken (killed day before), green peas, potato salad, sliced tomatoes, dessert, iced tea.

Monday dinner: Left-overs from above.

On the whole, diet consists of: Collards, corn bread (no whole wheat flour), chicken, eggs, 1 qt. of milk per day, No tomato juice canned. Not much fat meat used in cooking, because not liked by family. Butter is preferred.

Method of cooking:

Length of cooking vegetables: Tomatoes "cold-packed" (put in jars after just 15 min. boiling).

"Pot likker" drunk or thrown away? Drunk

Soda used? No, except a pinch in collards, but not enough to turn their color.

Fat meat? Not much used for cooking vegetables.

Kinds of groceries usually bought:

White or whole-wheat flour? Never whole-wheat.
Much canned goods? No, except in winter.
Fat meat or other kinds: Not much fat meat. Chicken used most often.
Much corn? Corn meal used generally.
Molasses? No
Green vegetables, raw or cooked? Green vegetables out of garden.

Nutritional history:

Good appetite for everyone? Yes.
Has anybody ever had digestive troubles? The wife.
Constipation, diarrhea, gas, eruptions? The wife had gas when she was so overweight; less now.
Teeth?
Gums?
Anaemia?
Goiter?
Ophthalmia?
Rickets?

Regional diseases:

Malaria?
Hookworm?

Habits:

Tobacco.		
Alcohol.		
Drugs.		
Meals.	Number:	Regularity:
Sleep.	Regularity:	Irregularity:

Family history:

The wife is a large, well-nourished looking woman, with tendency toward obesity. Nine years ago she weighed 200 lbs., but has reduced and remained at about 170 lbs. She is under 50 and has two daughters, one married, with a year-old baby; the other is a school girl. The wife has had gas pains when overweight; less now.

The husband, once a strong, large man, had a brain tumor in 1925; it was removed at Johns Hopkins. He has never gained back his weight and energy. He is tall and thin, continues to run his lime business with the help of his wife, and helps work the garden and tend the chickens. Wife helps him run truck for lime deliveries, keeps house, cooks, cans, manages everything.

The wife is a very capable, energetic woman. She was president of the P.T.A. in Grome a few years ago--left job because of another person's embezzlement of funds. She is from an adjoining county. Lived in a city in an adjoining county before husband's illness. Seems better educated and more energetic than average higher class resident of the township. Her grammar is practically perfect.

The family is not a farming family; it is a commercial family living rurally, and growing much of its own food.

Table II - Typical Menus for the Three Social Classes

Lowest Class	Middle Class	Highest Class
<u>Breakfast</u> Fried corn bread. Fat meat. Left-overs from day before fried: Cabbage, potatoes, or string beans.	<u>Breakfast</u> Biscuits. Ham or fat meat or sausage. Butter. Coffee.	<u>Breakfast</u> Apple sauce or peaches. Fried potatoes or cornflakes. Bacon. Eggs. Biscuits. Milk. Coffee. Butter.
<u>Dinner</u> Fried corn bread or corn dumplings. Collards or cabbage. Sweet potatoes or Irish potatoes. Fat meat.	<u>Dinner</u> Butter-bean and corn soup, cooked in fat meat. Collards or cabbage. Cornbread dumplings. Irish potatoes. Iced tea. Milk.	<u>Dinner</u> Collards. Boiled pork (fat meat). Corn dumplings. Boiled Irish potatoes. Potato salad Pickled beets. Peach preserves. Milk or iced tea.
<u>Supper</u> Left-overs from dinner.	<u>Supper</u> Sliced tomatoes. String beans in fat meat. Peach pie. Tea, coffee, or milk.	<u>Supper</u> String-bean soup. Stewed corn. Corn dabs. Sliced tomatoes or cucumbers. Iced tea or milk. Butter.

Table III - Mineral and vitamin values of 1-pound portions of various foods^{a/}

	Ca (Gm.)	P (Gm.)	Fe (Gm.)	Vitamin Units			
				A	B	C	E
String beans	0.249	0.231	0.00526	4,536	150	41CK ^{b/}	114
Collards	.913	.336	.00753	20,412	454	204CK	454
Cabbage	.204	.154	.00195	270	227	250 R	227
Tomatoes	.045	.132	.00200	3,560	158	158	91
Cucumbers	.045	.095	.00150	160		113	
Butter beans	.127	.603	.01089		694R ^{c/}	136CK	454
Corn	.027	.467	.00213	*	*	90R	*
Peaches	.045	.096	.00150	9,070 ^{d/}	*	41	
Apples	.036	.054	.00159	354	113	45	91
Corn bread	.250	.463	.00313				
White bread	.122	.422	.00403	-	-	-	-
Potatoes	.054	.240	.00413	122	181	50CK	113
Sweetpotatoes	.091	.204	.00349	11,658	318	59	159
Eggs, whole	.281	1.016	.01315	9,000	260		656
Fish, fried	.304	1.066	.00499	*	*	-	*
Milk, fresh	.535	.422	.00109	948	50	14	150
Bacon	.059	1.125	.01588	*	-	-	*
Butter	.072	.077	.00090	16,400	-	-	-
Beef	.059	.925	.01360	320	226	-	464
Ham	.104	.684	.00635	*	**	-	**
Beets	.127	.191	.00386	80	45	30CK	227
Sausage	.009	.123	.00091	*	**	-	**
Cornflakes	.068	.508	.01225			-	
Chicken	.057	1.052	.01452		680	-	*

a/ Rose, Mary Swartz, A Laboratory Handbook for Dietetics. Table XVIII.

b/ Symbols used are:

CK (cooked)

R (raw)

* (vitamin present, but exact amount unknown)

** (vitamin richly present, but exact amount unknown)

- (trace of vitamin present, but exact amount unknown)

c/ Twenty-five percent lost in cooking.

d/ Only in Elberta peaches.

Table IV - Foods ranked in order of their mineral and vitamin content*

Ca	P	Fe	Vitamin			
			A	B	C	G
Collards	Bacon	Bacon	Collards	Butter	Cabbage ^{b/}	Eggs
Milk	Fish	Chicken	Butter	beans ^{a/}	Collards	Beef
Fish	Chicken	Beef	Sweetpotato	Chicken	Tomatoes	Collards
Eggs	Eggs	Eggs	Peaches ^{c/}	Collards	Butter beans	Butter beans
Corn bread	Beef	Cornflakes	Eggs	Sweetpotato	Cucumbers	Cabbage
String beans	Ham	Butter beans	String beans	Eggs	Corn ^{d/}	Beets
Cabbage	Butter beans	Collards	Tomatoes	Cabbage	Sweetpotato	Sweetpotato
Butter beans	Cornflakes	Ham	Milk	Beef	Irish potato	Ham
Beets	Corn	String beans	Apples	Irish potato	Apples	Sausage
White bread	Corn bread	Fish	Beef	Ham	Peaches	Milk
Ham	White bread	Potatoes	Cabbage	Sausage	String beans	String beans
Sweetpotato	Milk	White bread	Cucumbers	Tomatoes	Beets	Irish potato
Butter	Collards	Beets	Irish potato	String beans	Milk	Tomatoes
Cornflakes	Irish potato	Sweetpotato	Beets	Apples	White bread	Apples
Beef	String beans	Corn bread	Fish	Milk	Fish	Corn
Bacon	Sweetpotato	Corn	Corn	Beets	Bacon	Chicken
Chicken	Beets	Tomatoes	Ham	Corn	Butter	Fish
Irish potato	Cabbage	Cabbage	Bacon	Peaches	Ham	Bacon
Tomatoes	Tomatoes	Apples	Sausage	Fish	Sausage	White bread
Cucumbers	Sausage	Peaches	White bread	Butter	Cornflakes	Butter
Peaches	Cucumbers	Cucumbers		Bacon	Chicken	
Apples	Peaches	Milk			Beef	
Corn	Butter	Sausage				
Sausage	Apples	Butter				

* Rank obtained from table III.

- ^{a/} Twenty-five percent lost in cooking.
^{b/} Lost in cooking.
^{c/} Elberta.
^{d/} Half lost in cooking.

Table V - Nutritive composition^{a/} of foods found in the typical daily menus for the three social classes in Grome

Lowest Social Class	
<u>Breakfast</u>	
Corn bread:	Carb., Ca*, P*, Fe-, B, G
Fat meat:	Fat, Prot.-
Leftovers from day before:	
Cabbage:	Carb., Prot., Ca, P-, Fe-, A, B*, C*** (uncooked), G* (destroyed by soda), Nic. Acid
Potatoes:	Carb., Prot.-, Ca-, P*, Fe*, A-, B**, C, G
String Beans:	Carb., Ca, P-, Fe*, A*, B*, C-, G*
<u>Dinner</u>	
Corn bread:	Carb., Ca*, P*, Fe-, B, G
Collards:	Carb., Prot., Ca***, P, Fe**, A***, B**, C** (uncooked), G** (destroyed by soda), Nic. Acid
or	
Cabbage:	Carb., Prot., Ca, P-, Fe-, A, B*, C** (lost in cooking), G* (lost by soda), Nic. Acid
Fat meat:	Fat, Prot.-
Sweetpotatoes	Carb., Prot.-, Ca, P, Fe, A***, B***, C*, G**
or	
Irish potatoes:	Carb., Prot.-, Ca-, P*, Fe*, A-, B**, C, G
<u>Supper</u>	
Corn bread:	Carb., Ca*, P*, Fe-, B, G
Collards:	Carb., Prot., P, Fe**, A***, B**, C** (uncooked), G** (lost by soda), Nic. Acid, Ca***
or	
Cabbage:	Carb., Prot., Ca, P-, Fe-, A, B*, C*** (uncooked), G* (lost by soda), Nic. Acid
Fat meat:	Fat, Prot.-
Irish potatoes	Carb., Prot.-, Ca-, P*, Fe*, A-, B**, C, G
or	
Sweetpotatoes:	Carb., Prot.-, Ca, P, Fe, A***, B***, C*, G**

^{a/} The estimate is chiefly qualitative. Rude quantitative estimates, indicated by asterisks or a minus sign, range from an abundance of the element (triple asterisk), to only a trace (minus sign).

Composition of foods as to minerals and vitamins obtained from table II. Carbohydrate, protein, and fat composition from table XIX, Rose, Mary Swartz, A Laboratory Handbook for Dietetics. Chatfield, C., and Adams, G., Approximate Composition of American Food Materials, U. S. Dept. Agri. Circular 549, June 1940, table 2, was also consulted.

Table V (Cont'd.)

Middle Social Class

Breakfast

Biscuits:	Carb., Prot.-, Fat-, Ca, P°, Fe, C-, G-
Fat meat	Fat, Prot.-
or	
Ham	Prot., Fat, Ca, P°, Fe°, A-, B°, G°
or	
Sausage:	Fat, Prot., P-, B°, G°
Butter:	Fat, Ca-, A°, D°
Coffee	
Sugar:	Carb.

Dinner

Butter beans:	} cooked together	Carb., Prot., Ca°, P°, Fe°, B°(25 percent lost in cooking), C°, G°
Corn:		Carb., P°, Fe, A-, B, C°, G
Fat meat:		Fat, Prot.-
Corn dumplings:		Carb., Ca°, P°, Fe-, B, G
Irish potatoes:		Carb., Prot.-, Ca-, P°, Fe°, A-, B°, C, G
Iced tea		
Milk:		Prot., Fat, Carb., Ca°, P, A, B, C-, G
Sugar:		Carb.

Supper

Sliced tomatoes:	Ca-, P-, Fe-, A°, B°, C°, G°
String beans and fat meat:	Carb., Fat, Prot.-, Ca, P-, Fe°, A°, B°, C-, G°
Peach pie:	Carb., Fat, P-, Fe-, A°(only in Elbertas), B, C
Tea or coffee or milk:	Prot., Fat, Carb., Ca°, P, A, B, C-, G
Sugar:	Carb.

Table V (Cont'd.)

Highest Social Class

Breakfast

Apple sauce	Carb. Fe-, A, B, C, G
or	
Peaches:	Carb., P-, Fe-, A** (only in Elbertas), B, C
Fried potatoes	Carb., Fat, Prot.-, Ca-, P*, Fe*, A-, B**, C, G
or	
Cornflakes:	Carb., Prot.-, Ca, P**, Fe***
Bacon:	Fat, Prot., Ca, P***, Fe***, C-, G-
Eggs:	Prot., Fat, Ca**, P**, Fe***, A*, B**, G***
Biscuits:	Carb., Prot.-, Fat-, Ca, P*, Fe, C-, G-
Milk:	Prot., Fat, Carb., Ca***, P, A, B, C-, G
Butter:	Fat, Ca-, A***, D*

Dinner

Collards:	Carb., Prot., Ca***, P, Fe**, A***, B**, C** (uncooked), G**
	(lost by soda), Nic. Acid
Boiled pork (fat meat)	Fat, Prot.-
or	
Ham	Prot., Fat, Ca, P**, Fe**, A-, B**, G**
or	
Chicken	Prot., Fat, Ca-, P***, Fe***, B***, G-
or	
Beef:	Prot., Fat, Ca, P**, Fe***, A, B*, G***
Corn dumplings:	Carb., Ca*, P*, Fe-, B, G
Boiled Irish potatoes:	Carb., Prot.-, Ca-, P*, Fe*, A-, B**, C, G
Potato salad:	Same
Pickled beets:	Carb., Prot.-, Ca, P, Fe, A, B, C-, G*
Peach preserves:	Carb., P-, Fe-, A** (only in Elbertas), B, C,
Milk	Prot., Fat, Carb., Ca***, P, A, B, C-, G
or	
Iced tea	

Supper

String bean soup:	Carb., Fat, Ca, P-, Fe*, A*, B*, C-, G*
Stewed corn:	Carb., Fat, P**, Fe, A-, B, C*, G
Corn dabs:	Carb., Fat, P**, Fe, A-, B, C*, G
Sliced tomatoes	Ca-, P-, Fe-, A*, B*, C***, G*
or	
Sliced cucumbers:	Carb., Ca-, P-, Fe-, A, C**
Iced tea	
or	
Milk:	Prot., Fat, Carb., Ca***, P, A, B, C-, G
Butter:	Fat, Ca-, A***, D*

Table VI - Sources of essential nutrients in the typical diet in Grome^o
(Arranged vertically in order of their importance as sources)

Lowest Class	Carb.	Prot.	Fats	Ca	P	Fe
Most of this food element from:	Corn bread Corn Dumplings Fresh corn Potatoes		Fat meat	Collards		Collards
Small amounts from:	String beans Cabbage Collards	Salt pork Collards Cabbage Potatoes		Corn bread String beans Cabbage Sweet-potatoes	Corn bread Irish potatoes Sweet-potatoes Collards String beans Cabbage	Irish potatoes String beans Sweet-potatoes Cabbage Corn bread
Middle Class						
Most of this food element from:	Biscuits Corn bread Corn dumplings Corn Butter beans Potatoes Sugar	Milk Ham Sausage	Fat meat Butter Lard Ham Sausage	Collards Milk	Ham Butter beans Corn Corn dumplings Biscuits Irish potatoes Milk	Collards Butter beans Ham String beans Irish potatoes
Small amounts from:	Milk String beans Peaches	Fat meat Butter beans String beans Biscuits Irish potatoes	Milk Biscuits	Butter beans Corn dumplings Corn bread Biscuits String beans Sweet-potatoes Irish potatoes Ham Tomatoes	String beans Peach pie Tomatoes Sausage	Corn dumplings Corn bread Biscuits Corn Tomatoes Peach pie

Table VI (Cont'd.)

Highest Class	Carb.	Prot.	Fats	Ca	P	Fe
Most of this food element from:	Biscuits Corn dumplings Corn dabs Potatoes Cornflakes Corn Sugar	Eggs Milk Chicken or Beef or Ham	Fat meat Butter Bacon Eggs	Milk Eggs Collards	Bacon Chicken Beef Ham Eggs Corn Corn dabs Cornflakes	Bacon Eggs Beef Chicken Cornflakes Ham Collards
Small amounts from:	Milk Beets Peach preserves Collards Apples String beans Cucumbers	Collards Bacon Biscuits Cornflakes Potatoes Fat meat Beets	Beef Milk Fried potatoes Biscuits Corn dabs	Corn dumplings Cornflakes Biscuits Bacon Ham Beef Beets String beans Butter Cucumbers Tomatoes Irish potatoes Chicken	Biscuits Potatoes Milk Beets Collards Cucumbers Tomatoes String beans Peaches	Potatoes String beans Biscuits Beets Corn Corn dabs Cucumbers Tomatoes Peaches Apples

Lowest Class	Vitamin				Nic. Acid
	A	B	C	G	
Most of this food element from:	Collards Sweetpotatoes	Collards Sweetpotatoes	Collards Cabbage (some lost in cooking)	Collards (destroyed by soda) Sweetpotatoes	Collards Cabbage
Small amounts from:	String beans Cabbage Irish potatoes	Irish potatoes String beans Cabbage Corn bread	Sweetpotatoes Irish potatoes String beans (some lost in cooking)	Cabbage (destroyed by soda) String beans Irish potatoes Corn bread	

Table VI (Cont'd.)

Middle Class	Vitamin				Nic. Acid
	A	B	C	G	
Most of this food element from:	Collards Sweetpotatoes Butter Peaches (Elberta) Milk String beans Tomatoes	Collards Butter beans (25 percent lost in cooking) Ham Sausage Tomatoes String beans	Tomatoes Collards Butter beans Corn (some lost in cooking)	Collards (destroyed by soda) Butter beans Milk Ham String beans Tomatoes Sausage	Collards Egg yolk Milk Cabbage, green
Small amounts from:	Ham Corn Irish potatoes	Milk Peach pie Corn Corn dumplings	Peaches Irish potatoes (some lost in cooking) Biscuits Milk String beans (some lost in cooking)	Corn Irish potatoes Corn dumplings Milk Biscuits	
Highest Class					
Most of this food element from:	Butter Collards Peaches (Elberta)	Chicken Collards Potatoes Eggs Ham	Tomatoes Cucumbers Collards (some lost in cooking) Corn Corn dabs	Collards (destroyed by soda) Beef Eggs Ham	Beef Chicken Egg yolk Milk Collards Cabbage, green Tomato juice
Small amounts from:	String beans Eggs Milk Tomatoes Cucumbers Beef Beets Apples Potatoes Ham Corn	Beef String beans Tomatoes Milk Cucumbers Corn Corn dabs Peaches Beets Apples	Apples Peaches Potatoes Milk String beans Beets Biscuits Bacon	Beets String beans Tomatoes Corn Corn dabs Milk Irish potatoes Apples Chicken Biscuits Bacon	

Table VII - Daily Bodily Requirements of Essential Food Elements*

Protein:	Man: 1 gm. per kg. of body weight. Infant: 3 gm. per kg. of body weight.
Carbohydrates:	500 gm. per day - all the healthy individual can well take care of.
Fats:	200 gm. per day maximum. 75 gm. minimum. For the average man

Ordinarily, 50 percent of the calories of the diet should be derived from carbohydrates, with starch predominating; 35 to 38 percent from fat; and the remainder from protein.

Calcium:	Man: 0.68 gm. Child: 1.0 gm. Pregnant or lactating woman: 1.0 gm.	Calcium needs to be provided in conjunction with liberal amounts of P, vitamin A and D, and sunlight.
Phosphorus:	Man: 1.32 gm. Child: 1.0 gm. Pregnant or lactating woman: 1.32 gm.	Efficient use of P depends on adequate amounts of Ca, vitamins A and D, and sunlight.
Iron:	Man: 0.015 gm. (This allowance is probably 50 percent above minimum requirement.) Woman: 0.015 gm. Pregnant or lactating woman: 20 per- cent more. Child: 1.016 gm.	Copper must be present for the utilization of iron. Fe of hemo- globin not as effi- ciently used as the Fe of milk. Fe of whole- grain cereals also efficiently used. Twice as much Fe of beef and liver is re- quired to produce same curative effect.
Iodine:	In regions near the sea, enough furnished by food and water.	
Sulphur:	Enough found in proteins, so that if the protein requirement is met, the S requirement is met also.	

Potassium:
Sodium:
Magnesium:
Chlorine:
Fluorine:
Manganese:
Copper:
Other Elements:

Not possible to say definitely what are the requirements, but if vegetables are generously eaten, the requirements are probably met.

*From Rose, Mary Swartz.

Table VII (Cont'd.)

Vitamin A:	Can be stored, and intake must be at least 15 times above minimum for maintenance of adult without signs of deficiency disease to maintain optimal storage. Adult: At least 100 Sherman units per 100 calories on normal energy intake, or 2,000 to 4,000 International units. For protection from colds: 5,000 Sherman units. Child: 2,000 Sherman units. Pregnant or lactating woman: Generous supply - 1 qt. milk, 1 egg, green vegetable a day = 5,000 Sherman units plus cod-liver oil which gives vitamin D and more vitamin A = 6,000 Sherman units.
Vitamin B:	Strong effect upon appetite and health of alimentary tract. Prevents polyneuritis. Vitamin B ₁ (thiamin) forms part of an enzyme system governing cellular metabolism. It is converted into co-carboxylase, which is essential for the oxidation of peruvic acid, one of the intermediary products of carbohydrate metabolism. Adult: 10 Sherman-Chase units per 100 calories. Child: 20 Sherman-Chase units per 100 calories. In special cases of poor appetite and digestion: Much larger amounts.
Vitamin C:	Its lack gives fragile blood vessels, causes bones and teeth to lose calcium, and causes connective tissue to degenerate. Man: 2 Sherman-LaMer units per 100 calories. Children: Much larger amounts - 80 units. Pregnant or lactating woman: 50 percent above average. Or, according to Smith: ^{1/} 20 mg. ascorbic acid daily for infants. 40 mg. ascorbic acid daily for children. 50 mg. ascorbic acid daily for adults. This is equivalent to 400, 800, 1,000 International units respectively. Probably should be 50 percent more to cover losses in cooking, storage, etc.
Vitamin D:	A specific against rickets in children, but larger amounts are needed to provide optimal conditions for growth and best development of teeth. Formed in body by action of ultra-violet light upon skin. Therefore, the amount needed in diet is related to climate, season, clothing, and mode of life. Vitamin D is important factor in use of Ca and P. Do not know much about desirable quantities at different ages. Infants: 2 tps. or its equivalent.

^{1/} Smith, S. L., Human Requirements of Vitamin C, Jour. Am. Med. Assn., CXI, 1938, pp. 1753-69.

Table VII (Cont'd.)

Vitamin G: Necessary for growth in young and maintenance of characteristics of youth in mature adults. Do not know optimal amounts, but to insure liberal intake.
Adult: 20 Sherman-Bourquin units per 100 calories.
Children: 400 Sherman-Bourquin units per day.
In pregnancy, amount of vitamin G stored by embryo depends upon amount in mother's diet; also in lactation.
Or, according to Daniel and Munsell^{2/}, the exact quantitative requirement of riboflavin (vitamin G) is uncertain, but it has been observed that diets satisfactory in other respects usually have 600 or more Bourquin-Sherman units of riboflavin per adult daily.

Nutrition Consumption Unit: The estimated daily need for nutrients of the man of moderate activity: 3,000 calories, 67 gm. of protein, 0.68 gm. of calcium, 1.32 gm. of phosphorus, 0.015 gm. of iron, 2,000 to 6,000 International units of vitamin A, 1,000 to 1,500 International units of vitamin C, and 600 Bourquin-Sherman units of riboflavin (vitamin G).

Effects upon vitamins of processing foods:

- Vitamin A: Not lost in cooking. Does not dissolve in water.
Vitamin B₁: Destroyed by heat and soda, dissolves in water. Lost especially in cabbage, string beans and collards.
Vitamin C: Most easily destroyed in cooking, but some cooked foods contain significant amounts. Lost in storage, except that storage, cooking, or canning has little effect upon its acid form in tomatoes and citrus fruit. Citrus fruits, tomato juice, and raw leafy vegetables are rich sources. Dissolves in water.
Vitamin D: Not destroyed by ordinary cooking.
Vitamin G: (Riboflavin): Not easily destroyed except with soda. Dissolves quickly in cooking water.
Vitamin E: Not readily destroyed by cooking. Does not dissolve in water.
Nicotinic acid: Pellagra-preventive element of vitamin-B complex. Dissolves in water.

Storage: No evidence that vitamins D and E, riboflavin, and nicotinic acid are destroyed by storage. Vitamins A, B, and C are lost in storage.
Canning: Does not destroy vitamin content.
Drying: Vitamins A, B, and C disappear.

^{2/} Daniel, E. P., and Munsell, H. E. Vitamin Content of Foods. U. S. Dept. Agr. Misc. Pub. 275. 1937.

Table VII (Cont'd.)

Principal Food Groups:

Flour and cereals.

Milk.

Potatoes.

Leafy vegetables.

Other vegetables.

Fruits, tomatoes, and citrus.

Other fruits.

Lean meat, poultry, fish.

Eggs.

Fats.

Sugar.

Table VIII - Evaluation of Nutritional Adequacy of Average Diet

	Lowest Social Class	Middle Social Class	Highest Social Class
Carbohydrates	Abundance, even superfluity, provided in amounts of corn consumed in various forms. Also derived in small amounts from vegetables customarily eaten - string beans, cabbage, collards. More than the 500 gms. per day which can be taken care of by the healthy person.	To the carbohydrates used by the lowest social class are added by this class a few more customary sources - biscuits; sugar; butter beans; and for smaller amounts, milk and peaches. Since even the diet of the former class was overbalanced toward the starches and sugars, the diet of this class is more so.	Sources of carbohydrates practically the same as for the middle social class diet, with the addition of an occasional cereal such as cornflakes or puffed rice. Small amounts contributed by beets, peach preserves, apple sauce, and cucumbers. Carbohydrates overbalance diet, as is characteristic of this region.
Protein	Serious lack of protein, due to almost no consumption of milk, cheese, butter. Small amount obtained from salt pork, collards, cabbage. Not enough to supply average adult need of 1 gm. per kg. of body weight, or 67 gm.	The deficiency of protein in the diet of the lowest class is lessened somewhat in the middle class diet by the addition of milk and ham or sausage as primary sources, and more frequent use of biscuits and butter beans as secondary sources. Adequate servings of these, plus the common sources of string beans, Irish potatoes, and fat meat, would supply the daily minimum requirement of 67 gm.	Eggs; milk; and occasionally beef, chicken, ham, or bacon contribute a much larger percentage of protein to this diet than is found in those of the middle or lower classes. With the other sources commonly found in the other two types of diets, the protein minimum daily requirement is usually met.
Fats	Abundance, even superfluity, provided by amounts of fat salt pork eaten, all vegetables cooked with fat pork; and corn dabs fried in grease. Daily minimum requirement of 75 gm. is probably met.	The abundance of fats found in the lowest class diet is added to here by butter, ham or sausage, and the fats in milk and shortening for biscuits. The habit of cooking all vegetables in much fat meat prevails here too.	Fats are still overabundant, as the custom of cooking with much fat meat pervades even upper-class households. In addition, this diet provides bacon, eggs, and beef.

Table VIII (Cont'd.)

Lowest Social Class	Middle Social Class	Highest Social Class
<p>Collards are a very rich source of calcium, but about 3/4 lb. would have to be eaten every day to supply the 0.68 gm. needed daily by the adult man, and about 1 lb. to provide the 1.0 gm. needed by the child and pregnant or lactating woman. This amount of collards is not eaten. Small amounts of calcium derived also from corn bread, string beans, cabbage, and sweetpotatoes in fall and winter. No milk taken generally. Calcium, to be utilized properly, must have liberal amounts of phosphorus, vitamins A and B, and sunlight. There is plenty of sunlight, but small supply of P, and no vitamin D since no fish-liver oils, and little egg yolk, salmon, or butter is found in this diet.</p>	<p>In addition to the insufficient source of Ca found in collards, this diet provides Ca in milk and also small amounts in the baking powder of biscuits and in butter beans, corn, string beans, sweetpotatoes in season, Irish potatoes, ham, and tomatoes. From all these sources together, the 0.68-gm. daily minimum requirement is probably provided. But in those middle-class families in which no milk is drunk--and it is more the exception than the rule to find milk abundantly drunk in this region--there is probably still a Ca deficiency.</p>	<p>Calcium supplied by milk, eggs, collards, and in smaller amounts by corn in its various forms, biscuits, bacon, ham, beef, beets, string beans, butter, cucumbers, tomatoes, Irish potatoes, and chicken. But since even among this class the regional aversion to milk exists, few eggs are eaten, and collards tend to be replaced in the diet by more variety in vegetables, the Ca supply is still deficient.</p>
<p>Chief sources of phosphorus in this diet are corn bread, potatoes, collards, string beans, and cabbage where it is found in very small amounts. One lb. of each food would yield only 1.42 gm. of P, which would supply the 1.32-gm. minimum requirement. But nothing like this quantity of food is consumed. P is needed for utilization of Ca, and can itself be utilized only when Ca, vitamins A and D, and sunlight are liberally present. Deficiency of P in this diet may prevent utilization of all Ca contained in potatoes and collards.</p>	<p>In addition to corn bread, potatoes, collards, string beans, and cabbage as slight sources of P, the diet of this class contains more frequently the richer sources such as ham, butter beans, biscuits (in the baking powder), milk, and lesser sources such as peaches, tomatoes, and sausage. The 1.32-gm. daily minimum requirement is probably provided. This would also insure full utilization of all Ca contained in the diet.</p>	<p>Phosphorus is provided here by bacon, chicken, beef, ham, eggs, corn, corn dabs and cornflakes, and in smaller amounts by biscuits, potatoes, milk, beets, collards, cucumbers, tomatoes, string beans, and peaches. The phosphorus picture is much the same as for the middle class.</p>

Table VIII (Cont'd.)

	Lowest Social Class	Middle Social Class	Highest Social Class
Fe	<p>Collards provide a fairly rich source of Fe; and small amounts are provided by Irish potatoes, string beans, sweetpotatoes (in season), cabbage and corn bread. The trace of copper needed for assimilation of iron is probably also present in adequate amounts, but not enough to supply daily optimal iron requirement of 0.015 gm. Would have to consume $\frac{1}{2}$ lb. each of collards, Irish potatoes, string beans, cabbage, and corn bread to provide 0.01102 gm. The minimum requirement, however, is probably 50 percent less than 0.015 gm. daily, which would be 0.0075 gm. This amount would be provided by the $\frac{1}{2}$ lb. of each food item mentioned above, but even this amount of each food is scarcely eaten. Therefore, the diet is deficient in iron.</p>	<p>Collards, insofar as they are eaten (and in the diets of the middle and highest classes they tend to be replaced by other vegetables, such as butter beans), are a rich source of iron, as are butter beans, sweetpotatoes (in season), and ham. Lesser sources in this diet are stringbeans, Irish potatoes, corn, biscuits, tomatoes, and peaches. About $\frac{1}{3}$ lb. of each food item mentioned above would supply the recommended 0.015-gm. daily requirement, or the estimated minimum requirement of 50 percent less.</p>	<p>Iron is provided by bacon, eggs, beef, chicken, cornflakes, ham, and collards, and in smaller amounts by potatoes, string beans, biscuits, beets, corn, corn dabs, cucumbers, tomatoes, peaches, and apples. The iron picture for this class is also much the same as for the middle social class, with the addition of a few more sources which are rich but are eaten rarely, such as chicken or beef.</p>
Vitamin A	<p>Collards are a rich source of vitamin A - richer than even butter. Sweetpotatoes are as rich a source in fall and winter. Adult daily requirement is only 100 Sherman units per 100 calories of normal energy intake - 3,000 units for average adult. One lb. of collards yields 20,412 units of vitamin A - almost seven times the minimum requirement. Present also in smaller amounts in string beans, and cabbage.</p>	<p>Collards supply adequate vitamin A in the diet when eaten, and sweetpotatoes also when in season (fall and winter). In addition, this diet provides some butter - a rich source of vitamin A - and also peaches which are rich in vitamin A if of the Elberta variety. Milk, string beans and tomatoes are additional sources. Ham, corn, and Irish potatoes supply small amounts. No deficiency of vitamin A.</p>	<p>Butter, collards, and Elberta peaches provide adequate vitamin A when eaten in sufficient quantities. Sweetpotatoes are a rich source in fall and winter. The other sources of vitamin A are found in the middle-class diet. Eggs, tomatoes, cucumbers, beef, beets, apples and potatoes are found here also. No lack of vitamin A.</p>

Table VIII (Cont'd.)

	Lowest Social Class	Middle Social Class	Highest Social Class
Vitamin B	<p>Collards are almost as rich a source of vitamin B as of vitamin A, and so are sweet-potatoes in season. The average daily adult requirement of vitamin B is 10 Sherman-Chase units per 100 calories or 300 units. One lb. of collards supplies 454 units of vitamin B. Small amounts found also in string beans and cabbage. But since a lb. of collards, or even half a lb. is scarcely eaten in a day on this diet, the supply of vitamin B is probably deficient. Vitamin B is water-soluble and is partially oxidized and lost in cooking. And what is not destroyed is lost unless the "pot likker" is all used.</p>	<p>Collards, and sweetpotatoes in season, are abundant sources of vitamin B. Butter beans, also provided frequently by this diet, have a large amount of vitamin B, but 25 percent of it is lost in cooking. The vitamin B of collards and string beans is also partially lost by cooking and destroyed by soda if soda is used in cooking. Ham, sausage, tomatoes, milk, peaches, corn, and corn dumplings contribute some vitamin B. The rich sources of vitamin B found in whole wheat, brown rice, peanuts, soybeans, liver, chicken, etc., are not present in this diet. If the proper cooking practices were followed, the vitamin B deficiency would not be as large as it is.</p>	<p>Chicken about once a week, collards, potatoes, eggs, and ham provide some vitamin B, but the really rich sources - wheat germ, liver, etc. - remain unknown. The improper cooking practices also destroy much of the vitamin B in this diet. The supply is probably below the daily minimum requirement of 500 units.</p>
Vitamin C	<p>Collards have a small amount of vitamin C - 0.45 units to the lb. cooked. Cabbage has a large amount of vitamin C - 250 units to the lb., but this is almost all lost in cooking. Heat destroys vitamin C. Since the daily adult minimum requirement is 2 Sherman-Latter units per 100 calories, which equals 60 units, or 1,000 to 1,500 International units, the diet is obviously seriously lacking in vitamin C.</p>	<p>Tomatoes are the most available and frequently used source of vitamin C in this diet. Not enough tomato juice is drunk. Collards, butter beans, and corn contain some vitamin C; but a good part of this is lost in cooking and discarded "pot likker." Peaches, milk, and biscuits contribute a very small amount. Also Irish potatoes and string beans which lose some of their vitamin C in cooking. The diet of the middle class is also lacking in sufficient vitamin C. Citrus fruits are rarely consumed.</p>	<p>Tomatoes, cucumbers, corn, corn cobs, and dumplings supply some vitamin C, but most of the vitamin C of collards is lost in cooking. Apples and bacon provide a little vitamin C, as do the other sources in the middle-class diet. Citrus fruits, as in the diets of the other classes, are rarely used. Vitamin-C supply is below par.</p>

Table VIII (Cont'd.)

	Lowest Social Class	Middle Social Class	Highest Social Class
Vitamin D	<p>This nutrient is completely lacking in this diet. It can, therefore be obtained only by sunlight. It is important for utilization of Ca and P, and not enough is provided by this diet to enable exploitation of available amounts of Ca which the diet does supply.</p>	<p>Vitamin D is as lacking in this diet as in the lowest class diet, except for the good amount contained in the little butter and eggs eaten, and the very small amount in the little milk drunk. Not enough is present in the diet to insure adequate utilization of Ca and P, and, therefore, proper bone and tooth building. Sunlight, acting upon the provitamin D in the human skin, is the only important source here.</p>	<p>Vitamin-D picture same as for middle-class diet.</p>
Vitamin G	<p>Collards supply 454 units of vitamin G per lb., which would almost provide the 20 Sherman-Bourquin units per 100 calories, or 600 units, the recommended daily intake for the average adult. But all this is destroyed if soda is used in the cooking, which is a prevalent custom. Half that amount of vitamin G found in cabbage is also destroyed through cooking with soda. String beans provide 114 units per lb.; and Irish potatoes 113. This falls far below the average daily requirement. In fall and winter sweetpotatoes provide some vitamin G, but not enough.</p>	<p>The vitamin-G picture here is practically the same as for that in the lowest class diet, except that this diet affords the few additional sources in butter beans, milk, ham, tomatoes, sausage, corn, and biscuits. The rich vitamin G sources - liver, eggs, cheese, wheat germ, peanuts, soybeans, etc. - are excluded from this diet. There is still a vitamin-G deficiency.</p>	<p>Collards provide some vitamin G, but much of it is lost if soda is used in the cooking. Beef, eggs, and ham, when eaten, also provide some vitamin G. Other sources not so often found in the middle-class diet are beets, chicken, and bacon. Vitamin G is not sufficiently supplied.</p>

Table VIII (Cont'd.)

	Lowest Social Class	Middle Social Class	Highest Social Class
Nicotinic Acid	Collards and cabbage both provide some nicotinic acid, the pellagra preventive factor of the vitamin-B complex, but not enough to insure freedom from pellagra in all cases where this diet is found. Rich sources of vitamin-B complex, including the P-P factor, such as beef, liver, eggs, beet greens, spinach, peanuts, peas, prunes, wheat germ, yeast, and salmon, are not found here at all.	Nicotinic acid is contributed here by collards and cabbage, as in the lowest class diet, and a little in what milk is consumed. The few eggs eaten also contribute nicotinic acid from their yolks. But the same chief rich sources of the substance which are lacking in the lower class diet are lacking here also.	Beef, chicken, egg yolk, milk, collards, green cabbage, and tomato juice, all contribute nicotinic acid to this diet. But not enough of the richest sources - liver, salmon, lean pork, green peas, spinach, kale, wheat germ, peanuts, etc. - are found here.
Summary	The average diet at this social level is conspicuously deficient in protein; phosphorus; and vitamin C, D, and G (if soda is used in the cooking). It is lacking in adequate supplies of Ca, Fe, vitamin B, and nicotinic acid. Symptoms of nutritional deficiency to be expected from this picture are: poor teeth, fragility of blood vessels, brittle bones, degeneration of connective tissue, rickets, retardation of growth in young and early aging in the mature, anemia, alimentary disorders and pellagra, polyneuritis, and listlessness. This diet is especially deficient for children and pregnant and nursing mothers.	The average diet at the middle-class level is likewise overburdened with fats and starches, but not quite so deficient in protein; phosphorus; and vitamins C, D, and G. It provides a little more Ca (through the occasional addition of milk), iron, vitamin B, and nicotinic acid. Aside from a few qualitative differences in the diet, the chief differences are quantitative - several more food items would probably be added at any one meal than is apt to be found in the lowest class diet, so that more sources of each nutrient would be provided. But the richest sources are still largely lacking.	The diet of the highest social class is different from the other two chiefly in quantity rather than quality. Instead of a menu perfectly balanced in all the nutrients, the tendency is to serve several starches or fats at the same meal when it can be afforded. For instance, potatoes in several forms or corn in several ways. The protein minimum requirement is more adequately met by this diet than by the others; and also the Ca, P, and Fe requirements. But all the vitamin requirements, except vitamin A, are not fully met. The drain upon children and pregnant and nursing mothers is especially heavy.

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